TELEPHONE ENGINEER TRAINEE PROGRAM

RURAL ELECTRIFICATION ADMINISTRATION

Prepared: January 1953

TELEPHONE ENGINEER TRAINEE PROGRAM

The Telephone Engineer Trainee Program is designed to provide 6 month organized training programs for groups of recent college graduates in electrical engineering. The training program includes basic training in the overall aspects of the REA program, both electric and telephone, with specialized training in the field of telephone engineering.

The primary objective of the program is to develop the ability of recent engineering graduates to work in the REA program with maximum efficiency at the earliest possible date after employment. In this connection, it should be kept in mind that very few colleges or universities provide their engineering students with specialized courses in telephony.

The training program outlined in this brochure is divided into five major phases as follows:

Phase I	-	Orientation (2 weeks)
Phase II	-	Basic lectures and organized classroom work (4 weeks)
Phase III	-	Specialized lectures and on-the-job training (8 weeks)
Phase IV	-	Field Trip (6 weeks)
Phase V	-	Assignment to specific projects (6 weeks)

Throughout the six month training program, the trainees will be under the general supervision of the Training Officer. Periodic conferences with the Training Section personnel will be scheduled and regular reports will be submitted by each trainee.

PHASE I - (2 weeks)

838130

Orientation: This phase of the training program will consist of (1) talks on the objectives, history, organization, general operations and legal basis of the REA program; and (2) one-day introductory training visits to each division of the agency.

FIRST WEEK

Monday:	9:30-10:15	History and Objectives of REA - Claude R. Wickard, Administrator
	10:15-11:00	U.S. Department of Agriculture- E. R. Draheim, Office of Personnel
	11:00-11:15	Recess
	11:15-12:00	The REA Act as Amended - Louis Gorrin, Office of the Solicitor
	1:00- 2:30	Basic Policies of REA - Harlow S. Person, Consulting Economist
	2:30- 2:45	Recess
	2:45- 3:45	Organizational Structure and Functions of REA - Robert T. Beall, Executive Officer
	3:45- 5:30	Aspects of the Telephone Program as Related to the Industry - Donnan E. Basler, Electronic Engineer

Tuesday: Introduction to the Engineering Division

	9:00- 9:30	Organization and Functions of the Engineering Division - J. K. O'Shaughnessy, Chief, Engineering Division
	9:30- 9:45	Introductory Remarks; Engineering Division's activities with relation to the Electric Program - W. M. Edmunds, Assistant Chief, Engineering Division

Tuesday: Introduction to the Engineering Division (con't)

9:45-10:30	Design and Construction	- O. W. Briden, Head, Electric Design and Construction Section
10:30-10:45	Recess	
10:45-11:30	Pole Inspection (Electric and Telephone Programs)	- R. L. McCutchan, Head Pole Inspection Section
11:30-12:15	Materials (Electric and Telephone Programs)	- Edward D. Tatum, Head, Controlled Materials Section
1:00- 1:45	Technical Operations and Maintenance (Electric and Telephone Programs)	- C. L. Schultz, Head, Technical Operations and Maintenance Section
1:45- 2:30	Introductory Remarks; Engineering Division's activities with relation to the Telephone Program	- R. W. Lynn, Assistant Chief, Engineering Division
2:30- 3:15	Design and Construction	- Robert W. Eddy, Head, Telephone Design and Construction Section
3:15- 3:30	Recess	
3:30- 4:15	Radio and Load Control (Electric and Telephone Programs)	- G. E. Dodrill, Head, Radio and Load Control Section
4:15- 5:00	Safety and Job Training	- F. H. LaMaster, Head, Safety and Job Training Section
5:00- 5:30	Buildings and Structures (Electric and Telephone Programs)	- H. F. Mabbitt, Head, Building and Structures Section

Wednesday: Introduction to the Operations Division

9:30-10:30	Organization and Functions of the Operations Division	- E. E. Karns, Chief, Operations Division
10:30-11:00	Rate Studies	- W. W. Arnett, Head, Electric Retail Rate Section
11:00-12:00	Operating Report Analysis; Management Analysis	- G. Z. Anders, Head, Management Section, and Violet O'Neill, Analyst, Management Section
1:00- 2:30	The Place of Mutual and Cooperative Associations in the REA Program	- Udo Rall, Head, Cooperative Education Section
2:30- 5:30	Loan Section: General discussion of Feasibility Studies, including KWH Estimates and Loan Review, and on-the-job review of Feasibility Study Process	- W. P. Nixon, Head, Electric Loans Section

Thursday: Introduction to the Technical Standards Division

9:30-10.00	Organization and Functions of the Technical Standards Division	- J. E. O'Brien, Chief, Technical Standards Division
10:00-10:30	Standards; Explanation of List of Materials	- Duncan Wicker, Head, Standards Section
10:30-11:00	Operating Problems; Discussion of Projects	- G. K. Ditlow, Head, Operating Problems Section

Thursday: Introduction to the Technical Standards Division (con't)

11:00-11:30	New Developments; Discussion of Projects	- J. F. Atkinson, Head, New Developments Section
11:30-12:00	Telephone Staff; Discussion of Functions and Activities	- Warner Smith, Head, Telephone Section
1:00- 5:30	Telephone Section; On-the-job review with special emphasis on development and improvement of standards and specifications of low cost equipment designed to serve sparsely settled areas	- Robert S. Neikirk, Telephone Engineer

Friday: Introduction to the Electric Distribution Area Offices

9:30-10:30	Organization, Staffing and Functions	- David Askegaard, Assistant Area Director, Southeast Area
10:30-12:00	Loan Activities: General Approach Feasibility Study Area Coverage	- Richard F. Richter, Loans Section, Southwest Area
12:30- 2:00	Operations: General Operations and Management Assistance Analyses of System Performance Power Use Program Cooperative Education	- Harold A. Whittle Operations Section, North Central Area
2:00--5:30	Engineering: Methods of Construction; REA Standards and Requirements Engineering Techniques; Voltage Regulations; Sectionalizing; System Studies	- Reginald E. Cole, Engineering Section Southwest Area

Second Week

Monday: Introduction to the Power Division

9:30-10:00	History, Organization, and Activities of the Power Division	- J. B. McCurley, Chief, Power Division
10:00-10:30	Functions of Steam Plants; Standardization, Design and Construction	- Ivan Bosman, Head, Steam Plants Section
10:30-11:00	Hydro Plants; Components and Their Purposes, Methods of Construction, Design Factors, Trends	- William G. Horkan, Head, Hydro Plants Section
11:00-11:30	Internal Combustion Plants; Components and Their Purposes, Methods of Construction, Design Factors, Trends	- E. J. Raushenberger, Head, Internal Combustion Plants Section
11:30-12:00	Functions of Power Transmission Section; Design of Transmission Systems, Construction and Right-of-way Problems	- Joseph Kaminski, Jr., Head, Power Transmission Section
1:00- 5:30	On-the-job review of activities of the Construction Coordination Section	- Gordon Messmer, Head, Construction Coordination Staff

Tuesday: Introduction to the Division of the Controller

9:30-10:30	Organization and Functions of the Controller Division	- Kermit Culver, Deputy Assistant Controller

Tuesday: Introduction to the Division of the Controller (con't)

10:30-12:00	General Review of the Function and Responsibilities of the Accounts Sub-division: Collections and Custodial Section General Accounts Section Loans Receivable Section Voucher and Employee Accounts Section Statistical Services Section	- Wells Ludlow, Assistant Controller
1:00- 2:00	Summary of Examination Activities of the Controller Division	- Robert A. Stein, Assistant Controller
2:00- 5:30	Review of activities of the Technical Staff with special emphasis on Telephone Program Accounting	- Kenneth L. Smith, Assistant Controller Keith H. Kittle, Accounting Specialist (Electric) Virgil P. Russell, Accounting Specialist (Telephone)

Wednesday: Introduction to the Telephone Loans Division

9:00-10:00	Organization and Function of the Telephone Loans Division	- R. A. Dell, Chief, Telephone Loans Division
10:00- 5:30	Assignment to separate sections for on-the-job review of activities of the section, with special emphasis on Loan Feasibility Studies.	

Thursday. Introduction to the Telephone Engineering Division

9:00-10:00	Organization and Function of the Telephone Engineering Division	- K. W. Benckert, Chief, Telephone Engineering Division

Thursday: Introduction to the Telephone Engineering Division (con't)

10:00-12:00 Assignment to various specialists for discussion of their respective duties.

12:30- 5:30 Assignment to separate sections for on-the-job review of the activities of the section with special emphasis on pre-loan engineering and construction cost estimates.

Friday:

9:00-10:30 Administrative Services Division - Panel Presentation

Introduction to the Division - William T. Templeman, Chief, Administrative Services Division

Property and Space Management Section
Procurement Procedures and Methods
Custodial Accountability
Inventories
Reproduction and Duplication Services
- Louis D. Knowles, Head, Property and Space Management Section

Communications and Records Management Section
Storage and Disposition of Records
Receipt and Dispatch of Communications
- Joseph K. Allison, Head, Communications and Records Management Section

Mapping Services Section - Edwin A. McPherson, Head, Mapping Services Section

Production Control Section - William E. Wirt, Head, Production Control Section

10:30- 2:00 Personnel Division - Panel Presentation

Moderator: Henry C. Starns, Chief, Personnel Division
Classification and Organization-Louis V. Mayola, Head
Employment Section - Louis K. Jorgensen, Head
Training Section - Hans S. Hoiberg, Head
Employee Relations, Safety and Health Section - Louise Robinson, Acting Head

2:00- 5:30 Information Services Division

Tour of the physical plant of Information Services Division and explanation of functions of sections:

Current Information Section - Allyn A. Walters, Head
Publications Section - Joseph H. Brewer, Head
Audio-visual Section - Andrew L. McLay, Head

PHASE II - (4 weeks)

Part I. Lectures on telephone engineering (2 weeks): This portion of the training program will provide an over-all survey of REA telephone engineering activities. It will not only acquaint the trainee with REA procedures and practices but will provide a broad technical background for specialized training which will be given in the third phase. (See Exhibit A, attached, for brief description of technical subjects to be treated in Phases II and III.)

INSTRUCTORS

John V. Buscemi, Transmission Specialist, Telephone Engineering Division
Hoburg B. Lee, Assistant Chief, Telephone Engineering Division
Thomas J. McDonough, Connecting Company Specialist, Telephone Engineering Division
Robert S. Neikirk, Telephone Engineer, Technical Standards Division
Frederick H. Nolke, Central Office Equipment Specialist, Telephone Engineering Division
James L. Robb, Outside Plant Specialist, Telephone Engineering Division
Howard M. Trueblood, Consultant (Telephone Program) Technical Standards Division

THIRD WEEK

Monday:	9:00 - 9:30	Opening Remarks -	H. B. Lee
	9:30 - 11:00	Outside Plant -	J. L. Robb
	11:00 - 11:15	Recess	
	11:15 - 12:30	Outside Plant -	J. L. Robb
	1:30 - 3:15	Central Office -	F. H. Nolke
	3:15 - 3:30	Recess	
	3:30 - 4:00	Movies: "Dial Conversion" "Before your Telephone Rings"	
	4:00 - 4:30	Buildings -	T. J. McDonough
	4:30 - 5:30	Traffic	J. V. Buscemi

Tuesday:	9:00 - 11:00	Outside Plant -	J. L. Robb
	11:00 - 11:15	Recess	
	11:15 - 12:00	Outside Plant -	J. L. Robb
	12:00 - 12:30	Materials Program -	T. J. McDonough
	1:30 - 3:15	Central Office -	F. H. Nolke
	3:15 - 3:30	Recess	
	3:30 - 4:00	Movie: "Story of Progress"	
	4:00 - 4:30	Central Office -	F. H. Nolke
	4:30 - 5:30	Numbering -	J. V. Buscemi
Wednesday:	9:00 - 11:00	Outside Plant -	J. L. Robb
	11:00 - 11:15	Recess	
	11:15 - 11:30	Outside Plant -	J. L. Robb
	11:30 - 12:30	Traffic -	J. V. Buscemi
	1:30 - 3:15	Central Office -	F. H. Nolke
	3:15 - 3:30	Recess	
	3:30 - 4:00	Movie: "Telephone Lineman"	
	4:00 - 5:30	Connecting Company Agreements -	T. J. McDonough
Thursday:	9:00 - 11:00	Outside Plant -	J. L. Robb
	11:00 - 11:15	Recess	
	11:15 - 11:45	Outside Plant -	J. L. Robb
	11:45 - 12:30	Numbering -	J. V. Buscemi
	1:30 - 3:15	Central Office -	F. H. Nolke
	3:15 - 3:30	Recess	
	3:30 - 4:00	Movie: "Stringing Open Wire"	
	4:00 - 5:30	Connecting Company Agreements -	T. J. McDonough

Friday:	9:00 - 10:00	Traffic -	J. V. Buscemi
	10:00 - 11:00	Central Office -	F. H. Nolke
	11:00 - 11:15	Recess	
	11:15 - 12:30	Central Office -	F. H. Nolke
	1:30 - 2:30	Area Coverage Survey -	T. J. McDonough
	2:30 - 3:15	Outside Plant -	J. L. Robb
	3:15 - 3:30	Recess	
	3:30 - 5:30	Outside Plant -	J. L. Robb

FOURTH WEEK

Monday:	9:00 - 10:00	Telephone Electronic Equipment -	Dr. H. M. Trueblood
	10:00 - 11:00	Transmission -	R. S. Neikirk
	11:00 - 11:15	Recess	
	11:15 - 12:30	Outside Plant -	J. L. Robb
	1:30 - 2:00	Outside Plant -	J. L. Robb
	2:00 - 3:15	Numbering -	J. V. Buscemi
	3:15 - 3:30	Recess	
	3:30 - 5:30	Central Office Equipment -	F. H. Nolke
Tuesday:	9:00 - 10:00	Central Office Equipment -	F. H. Nolke
	10:00 - 11:00	Telephone Electronic Equipment -	Dr. H. M. Trueblood
	11:00 - 11:15	Recess	
	11:15 - 12:30	Area Coverage Design -	T. J. McDonough
	1:30 - 3:15	Transmission -	R. S. Neikirk
	3:15 - 3:30	Recess	
	3:30 - 5:30	Outside Plant -	J. L. Robb

Wednesday:	9:00 - 10:00	Central Office Equipment - F. H. Nolke
	10:00 - 11:00	Traffic - J. V. Buscemi
	11:00 - 11:15	Recess
	11:15 - 12:30	Movies "Drop Wire Runs" "Step by Step Switch" "Microwaves"
	1:30 - 2:30	Pre-Allocation Engineering-T. J. McDonough
	2:30 - 3:15	Transmission - R. S. Neikirk
	3:15 - 3:30	Recess
	3:30 - 4:30	Transmission - R. S. Neikirk
	4:30 - 5:30	Transposition Systems-Dr. H.M. Trueblood
Thursday:	9:00 - 10:00	Transmission - R. S. Neikirk
	10:00 - 11:00	Utility Regulation Authority- T. J. McDonough
	11:00 - 11:15	Recess
	11:15 - 12:30	Movies: "Station Installer" "Microwaves"
	1:30 - 2:15	Outside Plant - J. L. Robb
	2:15 - 3:15	Transposition Systems-Dr. H.M. Trueblood
	3:15 - 3:30	Recess
	3:30 - 4:30	Numbering - J. V. Buscemi
	4:30 - 5:30	Central Office Equipment - F. H. Nolke
Friday:	9:00 - 11:00	Outside Plant - J. L. Robb
	11:00 - 11:15	Recess
	11:15 - 12:00	Transmission - R. S. Neikirk
	12:00 - 12:30	Movies: " A Nation at your Fingertips" "Speeding Speech"
	1:30 - 2:30	Operator Toll Dialing - T. J. McDonough

2:30 -	3:15	Central Office Equipment -	F. H. Nolke
3:15 -	3:30	Recess	
3:30 -	4:30	Central Office Equipment -	F. H. Nolke
4:30 -	5:30	Discussion	Panel

Part II. Course in basic accounting, budget, financial requirements, and requisitions (2 weeks): The fifth and sixth weeks of the training program will consist of combined classroom lectures and individual work projects. The trainee will acquire a knowledge of balance sheets, operating reports, etc., which will be necessary for training in telephone loans activities during part 1 of Phase III.

PHASE III - (8 weeks)

Part I. Assignment to the Telephone Loans Division (2 weeks): consisting of two 1½-hour lectures per day to the trainees as a group, and individual assignments to operating sections of the division for the remaining work day. This portion of the program is designed to give the trainee an understanding of the interrelation between engineering design and co construction, technical operation and maintenance, and the requirements for certification of loan feasibility.

SEVENTH WEEK

Monday:	9:00-10:30	Information Required for Telephone Loan Application - William A. Ricketts, Head, North Central Section, Telephone Loans Division
	10:30-10:45	Recess
	10:45-12:15	Area Coverage Surveys - Edgar F. Renshaw, Assistant Chief Telephone Loans Division
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-10:30	Non-Duplication - Joseph Vellone, Assistant to Chief, Telephone Loans Division
	10:45-12-15	Acquisitions - Harold F. Clark, Head, Western Section, Telephone Loans Division
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-10:30	Switcher Lines - Walter E. Rich, Head, Southwestern Section, Telephone Loans Division
	10:45-12:15	Engineering Study and Master Budget - A. H. Schartner, Assistant Head, Western Section, Telephone Loans Division

	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10:30	Valuation Procedure - Donnan E. Basler, Electronic Engineer Office of Administrator
	10:45-12:15	Equity Requirements and Valuation Procedure- Donnan E. Basler
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-10:30	Feasibility Study - Joseph Vellone
	10:45-12:15	Feasibility Study - Joseph Vellone (continued)
	1:00- 5:30	On-the-job Training in Sections

EIGHTH WEEK

Monday:	9:00-10:30	Review of Typical Allocation Docket - Thomas A. Martin and Mary G. Folckemer, Loan Specialists, Telephone Loans Division
	10:45-12:15	Review of Typical Allocation Docket (continued)
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-10:30	Allocation and Loan Conditions - Thomas A. Martin and Mary G. Folckemer
	10:45-12:15	Allocation and Loan Conditions (continued)
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-10:30	Administrator's Findings - Joseph Vellone
	10:45-12:15	Loan Contract, Mortgage and Note - Donnan E. Basler
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10.30	Assisting Borrowers in Preparing Information for Commissions - Edward Maddox, Assistant Chief, Telephone Loans Division

Thursday:	10:45-12:15	Assisting Borrowers in Preparing Information for Commissions (continued) - Edward Maddox
	1:00- 3:00	Review of Borrowers' Bulletins Pertaining to the Telephone Loans Division - Walter L. Wolff, Head, Southeast Section Telephone Loans Division
	3:15- 5:30	Review of Borrowers' Bulletins Pertaining to Telephone Loans Division (continued) - Walter L. Wolff
Friday:	9:00-10:30	Satisfying Requirements for Advance of Funds - Charles A. Jackson Head, Northeast Section, Telephone Loans Division
	10:45-12:15	Activities of the Operations Section - Charles H. Tool, Head, Operations Section Telephone Loans Division
	1:00- 5:30	Trainee Reports and Conferences with Training Section

Part II. Assignment to the Telephone Engineering Division (6 weeks): consisting of two 1½-hour lectures per day to the trainees as a group, and individual assignments to operating sections of the division for the remaining work day. This portion of the program elaborates on the lectures presented during the 3rd and 4th weeks and is supplemented by on-the-job training.

INSTRUCTORS

Donnan E. Basler, Electronic Engineer, Office of Administrator
John V. Buscemi, Transmission Specialist, Telephone Engineering Division
Frank G. Jolley, Telephone Engineer, Telephone Engineering Division
Frederick H. Nolke, Central Office Equipment Specialist, Telephone Engineering Division
Thomas J. McDonough, Connecting Company Specialist, Telephone Engineering Division
Robert S. Neikirk, Telephone Engineer, Technical Standards Division
James L. Robb, Outside Plant Specialist, Telephone Engineering Division
F. Berlin Shoemaker, Head, Telephone Rate Section, Operations Division
John D. Soma, Assistant to Chief, Telephone Engineering Division
Howard H. Trueblood, Consultant (Telephone Program) Technical Standards Division
K. S. Johnson, Consultant (Telephone Program) Technical Standards Division
Edward D. Tatum, Head, Controlled Materials Section, Engineering Division

NINTH WEEK

Monday:	9:00-12:15	Discussion of Rates and Toll- F.B. Shoemaker
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-12:15	Management Practices and Problems - F. B. Shoemaker
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Connecting Company Agreements- F. B. Shoemaker
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-12:15	Production Control - Donnan E. Basler
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-10:30	Electronic Equipment - Dr. H. M. Trueblood
	10:45-12:15	Station Equipment - K. S. Johnson
	1:00- 5:30	On-the-job Training in Sections

TENTH WEEK

Monday:	9:00-10:30	Central Office Equipment - F. H. Nolke
	10:45-12:15	Outside Plant - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-12:15	Contracts, Borrowers' Bulletins, Staff Bulletins, pertaining to Telephone Engineering Division - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Pre-Allocation Engineering Reports - T. J. McDonough
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10:30	Traffic - J. V. Buscemi
	10:45-12:15	Transmission - R. S. Neikirk
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-10:30	Electronic Equipment - K. S. Johnson
	10:45-12:15	Protection - Dr. H. M. Trueblood
	1:00- 5:30	Reports

ELEVENTH WEEK

Monday:	9:00-10:30	Central Office Equipment - F. H. Nolke
	10:45-12:15	Outside Plant - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections

Tuesday:	9:00-12:15	Contracts, Borrowers' Bulletins, Staff Bulletins, etc. pertaining to Telephone Engineering Division - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Area Coverage Design - T. J. McDonough
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10:30	Traffic - J. V. Buscemi
	10:45-12:15	Transmission - R. S. Neikirk
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-10:30	Electronic Equipment - K. S. Johnson
	10:45-12:15	Crosstalk - Dr. H. M. Trueblood
	1:00- 5:30	On-the-job Training in Sections

TWELFTH WEEK

Monday:	9:00-10:30	Central Office Equipment - F. H. Nolke
	10:45-12:15	Outside Plant - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-12:15	Contracts, Borrowers' Bulletins, Staff Bulletins, etc., pertaining to Telephone Engineering Division - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Outside Plant Plans and Specifications - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10:30	Traffic - J. V. Buscemi
	10:45-12:15	Transmission - R. S. Neikirk
	1:00- 5:30	On-the-job Training in Sections

Friday:	9:00-10:30	Uniform System of Accounts - T. J. McDonough
	10:45-12:15	Materials Program - Edward D. Tatum
	1:00- 5:30	Reports

THIRTEENTH WEEK

Monday:	9:00-10:30	Central Office Equipment - F. H. Nolke
	10:45-12:15	Outside Plant - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections
Tuesday:	9:00-12:15	Contracts, Borrowers' Bulletins, Staff Bulletins, etc., pertaining to Telephone Engineering Division - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Bid Analysis - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-10:30	Numbering - J. V. Buscemi
	10:45-12:15	State Utility Regulation Authority - T. J. McDonough
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-12:15	Long-Range Planning - T. J. McDonough
	1:00- 5:30	On-the-job Training in Sections

FOURTEENTH WEEK

Monday:	9:00-10:30	Central Office Equipment - F. H. Nolke
	10:45-12:15	Outside Plant - J. L. Robb
	1:00- 5:30	On-the-job Training in Sections

Tuesday:	9:00-12:15	Contracts, Borrowers' Bulletins, Staff Bulletins, etc., pertaining to Telephone Engineering Division - J. D. Soma
	1:00- 5:30	On-the-job Training in Sections
Wednesday:	9:00-12:15	Cutover Procedure - F. G. Jolley
	1:00- 5:30	On-the-job Training in Sections
Thursday:	9:00-12:15	Numbering - J. V. Buscemi
	1:00- 5:30	On-the-job Training in Sections
Friday:	9:00-12:15	Closeout Procedure - J. D. Soma
	1:00- 5:30	Reports

PHASE IV (6 weeks)

(15th through 20th week)

FIELD TRIP: consisting of travel with the Field Loans specialist (telephone) and with the Field Engineer (telephone). In the course of this period the trainee will work with the field representatives in rendering advice and assistance to borrowers, when required, in such matters as submission of information required for feasibility studies, pre-loan engineering studies, area coverage surveys, inspection of construction, and technical operation and maintenance. The trainee will also have opportunity to observe the installation and cutover of central office equipment. Where practical a week will be spent with an operating telephone company.

PHASE V (approximately 6 weeks)

Specific project assignments starting with 21st week. In addition to writing a final report trainees will receive specific project assignments for the remainder of the six month training period before being assigned to engineering positions.

Exhibit A

BRIEF DESCRIPTION OF MAJOR SUBJECTS TREATED IN PHASES II & III

Subject: Area Coverage Design

Contents: This will be a continuation of the application of fundementals discussed in pre-allocation engineering as well as a general discussion of requirements of an area coverage design.

Subject: Area Coverage Survey

Contents: The engineers will be acquainted with the general procedure for making an area coverage survey, the criteria for classifying potential subscribers, the evaluation and forecast, the summary of results, the purpose of the survey, the responsibility for having it made, and the responsibility for review and approval and its importance to the final design.

Subject: Buildings

Contents: A discussion of the location, size, construction materials and important features required in an unattended central office building.

Subject: Central Office Equipment

Contents: The discussions on central office equipment will center around the central office specifications, DS-T-25R1, including progress and plans for further standardization of equipment. Particular emphasis will be placed on inter-office trunking as it pertains to system design. Power equipment, distributing frames and intercept equipment are covered. Methods and procedures for making acceptance tests and final inspections are presented.

Subject: Connecting Company Agreements

Contents: The effect of connecting company agreements on system design will be discussed. There will be a discussion of the general provisions of toll, extended area service, master (or control) office, joint use and boundary agreements. Illustrative example of a toll settlement will be discussed.

Subject: Materials Program

Contents: A discussion of the Controlled Materials Plan (CMP) as it applies to REA telephone borrowers. Borrowers must make proper application to NPA as early as possible and must file an application 120 days prior to the beginning of each calendar quarter. Brief review of the NPA Order M-77, application form NPAF-117 and some of the basic definitions that apply to CMP. The importance of each engineer taking action to be placed on the NPA mailing list to receive all NPA and CMP orders and regulations and forms that apply to the telephone industry will be emphasized.

Subject: Numbering

Contents: Numbering being directed toward the successive selection of smaller groups of telephone facilities, this principal will be used in presenting simplified numbering plan arrangements by way of introduction. The functions of the selector switch are covered in detail with emphasis on digit cancellation and absorption. Terminal per line and terminal per station connectors are related to the subject. The significance of the digits in a subscribers directory number as they relate to switching equipment is demonstrated. Background material is presented as a basis for the recent emergence of two letter five digit numbering for small dial central offices. The importance of selection of office code from the point of view of both nationwide toll dialing and universal numbering is illustrated by suitable examples. Arrangements for the provision of special services, verification and revertive calling are included in the illustrative example.

Subject: Operator Toll Dialing

Contents: General information on nationwide operator toll dialing will be discussed to a degree to acquaint the engineer with the basic plan. Particular attention will be directed to the phases of this subject most likely to be the concern of REA borrowers and their engineers.

Subject: Outside Plant

Contents: The basic requirements of the N.E.S.C., with regard to outside plant construction are presented. Factors in the selection of pole height and class; type of open wire; number of pairs, gage and covering material of cable are considered, as well as those affecting the choice of other units in the telephone construction contract, Form DS-T-10. Recommended staking and construction practices are introduced.

Subject: Pre-Allocation Engineering

Contents: Application of the basic technical data covered previously in the course as well as a general discussion on the requirements of a pre-allocation engineering report.

Subject: Uniform System of Accounts

Contents: Uniform System of Accounts, particularly plant accounts, as related to REA-financed companies and cooperatives. Method for classifying companies and cooperatives.

Subject: State Utility Regulation Authority

Contents: Presentation of requirements for preparation of exhibits and testimony to be used in hearing before state commissions.

Subject: Telephone Electronic Equipment

Contents: The discussion will cover generally the functions and the manner of functioning of various items of electronic and associated equipment used in transmission over voice, carrier and radio circuits.

Subject: Traffic

Contents: A qualitative discussion on telephone traffic will introduce the basis for accepted terminology and methods of calculation of traffic quantities. Calling rate, holding time and grade of service are defined and related to the concepts of unit calls and erlangs. The significance of trunk group efficiency will be stressed. Calculation of switch quantities for offices up to 800 lines are discussed in principal and illustrative examples are used liberally to demonstrate applications. Methods of performing measurements of telephone traffic in existing manual and dial central offices to include the use of plug counts, registers, pen recorders and switch counts are discussed. Criteria are presented when no measurements can be made.

Subject: Transmission

Contents: Discussion of effective transmission and its application to the design of subscriber plant to meet REA requirements. Trunk plant design and REA requirements. Application of voice frequency repeaters and loading.

Subject: Protection

Contents: The discussion will cover generally the functions and the manner of functioning of various items of protection equipment employed on telephone systems.

Subject: Station Equipment

Contents: The discussion will cover the developments which led up to the modern dial telephone set.

Subject: Long Range Planning

Contents: The discussion will cover new developments in the field of telephony some of which are still in the laboratory stage.

Subject: Cutover Procedure

Contents: The discussion will cover the step-by-step preparation for an orderly cut-over.

Subject: Closeout Procedure

Content: The discussion will cover the closeout documents and their processing.

Subject: Crosstalk

Contents: The physical causes of crosstalk in open-wire lines will be explained in sufficient detail to provide a basis for discussion of types of crosstalk and the relation of crosstalk to frequency. The bearing of this relation upon voice and carrier-frequency crosstalk and the methods of dealing with such crosstalk, by transpositions and otherwise, will be included.

Subject: Transposition Systems

Contents: The use and effectiveness of transposition systems in the limitation of crosstalk to desirable values, including the effect of irregularities in line construction, will be discussed.